



CRUMBLING BRIDGE SAFELY REMOVED WITH THE HELP OF DIAMOND SAWS

Bridge Spanned 13 Active Railroad Tracks in
Wyoming Residential Neighborhood



The Clark Street Bridge in Laramie, Wyoming spanned 13 Union Pacific Railroad tracks.

As infrastructure all over the United States continues to age and deteriorate, literally crumbling away, general contractors are increasingly seeing the value and advantages of using diamond tools to help restore or safely demolish these structures without damaging surrounding structures and keeping those around the area safe.



The Clark Street Bridge in Laramie, Wyoming was being removed due to a revised roadway alignment that would shift the bridge half a mile away. The existing bridge was crumbling and there were concerns that in taking it down, debris could fall onto the active Union Pacific railroad tracks, so it was vital that all precautions be taken to control the demolition. General Contractor S&S Builders had many options for taking the bridge down: explosive demolition, jackhammering/breaking in place or fully dropping the bridge, but since the 13 railroad tracks running under the bridge needed to remain in operation throughout the project, none of those methods were considered viable. Additionally, the bridge was located near a residential area, so the noise, vibration and risk of flying debris eliminated any kind of uncontrolled demolition as an option. It was determined that concrete cutting to assist in the selective structural demolition of the bridge was the best option.

S&S Builders contracted CSDA member Diamond Drilling & Sawing Company (DDSC) of Denver, Colorado to demolish the Clark Street Bridge using concrete sawing and pulverization methods. One of the most important aspects of this job was ensuring open and effective communication between the demolition contractor and the railroad representative, as cutting and other demolition tasks had to be coordinated with the railroad to ensure no trains passing underneath the bridge on any of the 13 operating tracks were in danger of being struck by falling debris.

Because of the level of existing deterioration, another concern was debris spontaneously falling from the bridge as demolition progressed, endangering not only the demolition contractor, but also any other construction personnel in the area and trains passing underneath the bridge. The contractor removed any crumbling concrete when possible prior to the demolition to prevent slips, trips, falls and flying loose debris, especially from the sidewalk that ran the length of the bridge. Any questionable areas were taped off to prevent personnel and equipment from entering the area of risk if the concrete could not be removed safely without compromising the integrity of the bridge.



Husqvarna slab saws with up to 36" blades were used to cut the bridge deck into 14-foot by 6-foot sections.

Once a demolition plan with the railroad was approved, DDSC commenced work on July 1, 2018. This engineered demolition plan was required for bridge removal to maximize safety and mitigate noise, dust and debris, as well as prevent damage to the surrounding properties. Demolition began with cutting the bridge deck into sections using Husqvarna 7000 and 9900 Diesel Slab Saws and up to 36" blades to get through the bridge deck. The bridge itself measured 1,660 feet long by 36 feet wide, and the deck was cut into 14-foot by 6-foot sections for removal. Removal was handled by excavators and moved into a stockpile area for processing. After the bridge deck sections were removed, DDSC then used flame torches to cut the steel girders and a crane was brought in to remove the steel.

The steel cutting created a fire hazard around the operational railroad tracks, so a railroad-specific fire suppression plan was implemented. This

Diamond Drilling & Sawing Company is celebrating 60 years of providing the highest level of concrete sawing, coring and demolition services using diamond tools, and 30 years under current ownership. DDSC was founded in 1959 by John Bayens. He was the founder and inventor, building all his equipment (high cycle and hydraulic) for the first 30 years of operations.

In 1989, Henk Dykhouse purchased the company after 10 years working at DDSC. Under Henk's leadership, the business grew from 7 employees and 4 trucks to 45 employees and more than 25 trucks. As Henk slowly began easing into retirement over the past five years, he brought on Matt Wiersma as President & CEO. In these last five years under Matt's leadership, DDSC has continued to grow by adding a new Airport, Bridge & Road Division, which consists of road rehab (crack sealing, control joint, saw and seal), bridge demolition, airport/highway panel replacement and deep sawing. This newer Airport, Bridge & Road Division has been added to DDSC's already large service division, which cuts concrete and performs demolition all throughout Colorado and the front range. DDSC has expanded into many of the lower 48 states by obtaining projects as a Prime or Subcontractor for many DOTs throughout the country. Today, DDSC has 65 employees and over 50 trucks.



DDSC's Airport, Bridge & Road Division, consisting of Jim Zappavigna, Eric Blackburn and Gerald Johnson, has 87 years of combined estimating, management and supervision experience and has completed over 500 bridge demolition projects throughout the United States. Specializing in complete and partial bridge demolition (deck removal, widenings and complete removal), their projects have included a range of various types of bridges, steel and concrete arches, steel trusses, steel and concrete substructures and steel and concrete superstructures. They have tackled bridges constructed over basic grade separations, spanning 1,000-foot water ways and over 15 sets of railroad tracks.

The Airport, Bridge & Road Division has also completed several "time limit" bridge removals, requiring complete removal during total shutdowns of roadways or railroads tracks. These projects involve nonstop work in windows ranging from four to 24 hours and also include the simultaneous removal of two complete bridges located two miles apart in the same 9-hour shutdown. The team is involved in their projects start to finish, including estimating, managing and supervising, as well as the design and construction of the engineered demolition plan submittals. This specific team has personally estimated and managed the successful completion of demolishing over 500 bridges throughout the United States over the last 30 years.



Cut sections were lifted out by crane.

plan consisted of charged water hoses and backpack pump can systems used on any area that was exposed to the flame torches prior to cutting. Proper PPE for the cutting was provided to operators, as was fall protection while working from manlifts to rig the beams for hoisting by crane.

After the steel girders were cut and removed, DDSC was tasked with pulverizing the 14 piers and abutments, then processing the concrete and removing rebar. The pulverized concrete was hauled off to a processing center for recycling.

In all, DDSC made 3,000 linear feet of saw cuts and removed 2,700 cubic yards of concrete, 600 tons of structural steel and 200 tons of reinforcing steel over a two month period. The job was completed on time and without incident or injury. Paramount to the success of this job was DDSC's effective communication with the Union Pacific Railroad officials to coordinate the demolition schedule with the train schedule, as well as their coordination with the crane operator, Winslow Crane Service of Denver. Winslow supported the



Excavators were used to assist in the demolition.



The bridge was demolished as part of a roadway relocation plan.

structural steel removal, which was a challenge as Laramie experiences frequent high winds and gusts. Managing and coordinating the crane work with DDSC while monitoring the weather added an additional challenge to this job.

The bridge removal project was a success, thanks to the versatility, hard work and dedication of the Diamond Drilling & Sawing Company crew. “Our ability to take on the complicated nature of this bridge with its many railroad tracks, while coordinating with the railroad and flaggers was key to the success of this job,” stated Eric Blackburn, Senior Project Manager of National Contracts for Diamond Drilling & Sawing Company. “The versatility of the entire DDSC crew is what makes us successful on these types of projects. Our highly skilled operators are proficient at all tasks this type of demolition requires,” he continued.

Once again, a CSDA contractor showcases the professionalism, versatility, flexibility and open communication that is essential for the success of projects like this. Cutting with diamond tools enables another project to be completed safely, precisely, on-time and with the highest level of professionalism.

COMPANY PROFILE

Diamond Drilling & Sawing Company is headquartered in Denver, Colorado and is celebrating 60 years in 2019. They have been in business since 1959 and with the current ownership since 1989, and a CSDA member since 1995. Their fleet consists of approximately 50 trucks. Diamond Drilling & Sawing Company is a full service contractor for slab sawing, wall sawing, structural demolition, GPR scanning, wire sawing, core drilling and surface grinding. In addition to the Service Division, DDSC's Airport, Bridges & Road Division specializes in larger scope cutting, rehab and demolition projects around the country; including seal repair, control joints, crack sealing, spall repair and panel replacements.

RESOURCES

General Contractor

S&S Builders
Laramie, Wyoming

CSDA Cutting Contractor

Diamond Drilling & Sawing Company
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Methods Used

Slab Sawing

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